

NPN-Silizium-Fototransistor
Silicon NPN Phototransistor
Lead (Pb) Free Product - RoHS Compliant

SFH 309 P
SFH 309 PFA



SFH 309 P



SFH 309 PFA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 380 nm bis 1180 nm (SFH 309 P) und bei 880 nm (SFH 309 PFA)
- Hohe Linearität
- 3 mm plane Plastikbauform im LED-Gehäuse
- Gruppiert lieferbar

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Industrieelektronik
- „Messen/Steuern/Regeln“

Features

- Especially suitable for applications from 380 nm to 1180 nm (SFH 309 P) and of 880 nm (SFH 309 PFA)
- High linearity
- 3 mm LED plastic package
- Available in groups

Applications

- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
SFH 309 P	Q62702P0245
SFH 309 PFA	Q62702P0246

Grenzwerte
Maximum Ratings

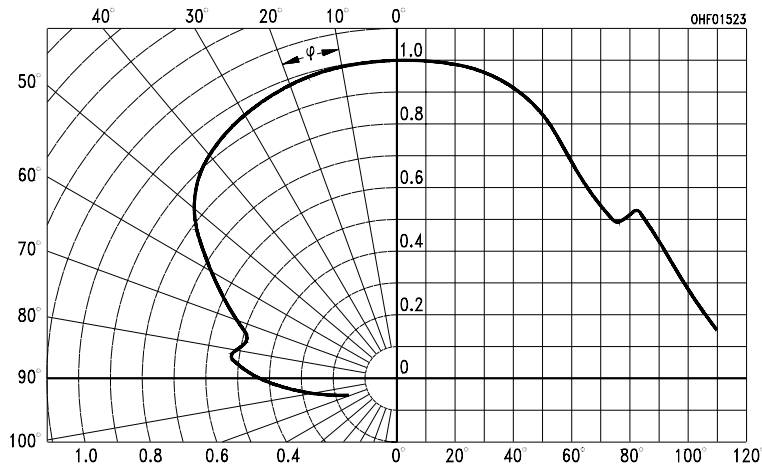
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 100	°C
Kollektor-Emitterspannung Collector-emitter voltage	V_{CE}	35	V
Kollektorstrom Collector current	I_C	15	mA
Kollektorspitzenstrom, $\tau < 10 \mu s$ Collector surge current	I_{CS}	75	mA
Verlustleistung, $T_A = 25 \text{ }^\circ\text{C}$ Total power dissipation	P_{tot}	165	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	K/W

Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)
Characteristics

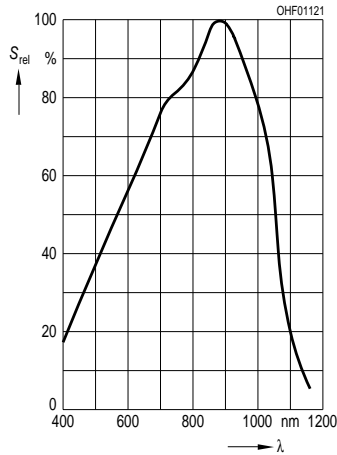
Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 309 P	SFH 309 PFA	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	860	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	380 ... 1180	730 ... 1120	nm
Bestrahlungsempfindliche Fläche ($\varnothing 220\text{ }\mu\text{m}$) Radiant sensitive area	A	0.038	0.038	mm^2
Abmessungen der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	0.45×0.45	0.45×0.45	$\text{mm} \times \text{mm}$
Halbwinkel Half angle	φ	± 75	± 75	Grad deg.
Kapazität, $V_{\text{CE}} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{CE}	5.0	5.0	pF
Dunkelstrom Dark current $V_{\text{CE}} = 25\text{ V}$, $E = 0$	I_{CEO}	1 (≤ 200)	1 (≤ 200)	nA

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.5 \text{ mW/cm}^2, V_{CE} = 5 \text{ V}$	I_{PCE}	≥ 63	μA
SFH 309 P: $E_v = 1000 \text{ lx}$, Normlicht/standard light A, $V_{CE} = 5 \text{ V}$	I_{PCE}	420	μA
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 1 \text{ k}\Omega$	t_r, t_f	6	μs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = 20 \mu\text{A}, E_e = 0.5 \text{ mW/cm}^2$	V_{CEsat}	150	mV

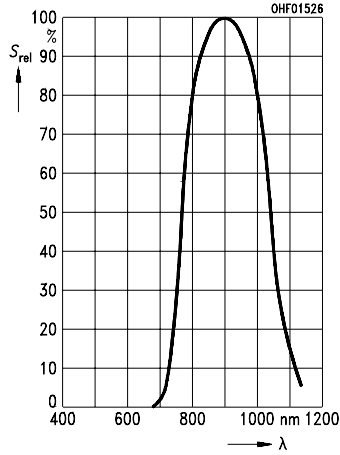
Directional Characteristics $S_{rel} = f(\varphi)$



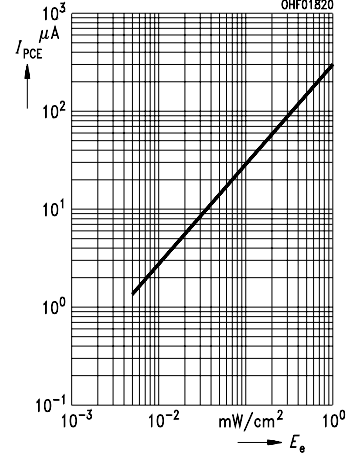
Relative Spectral Sensitivity, SFH 309 P $S_{rel} = f(\lambda)$



Relative Spectral Sensitivity, SFH 309 PFA $S_{rel} = f(\lambda)$

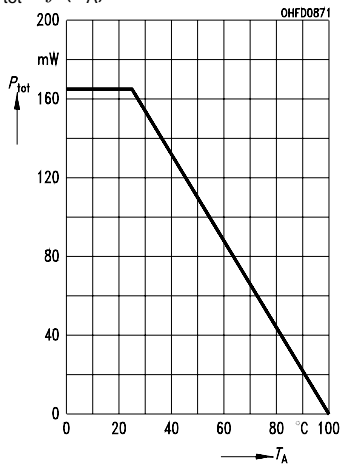


Photocurrent $I_{PCE} = f(E_e), V_{CE} = 5 V$



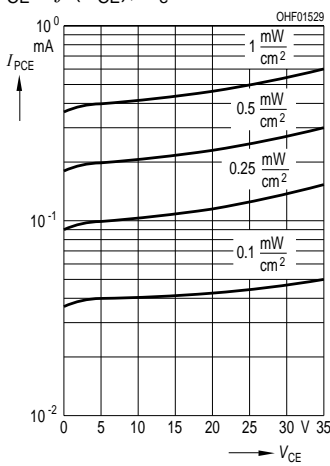
Total Power Dissipation

$P_{tot} = f(T_A)$



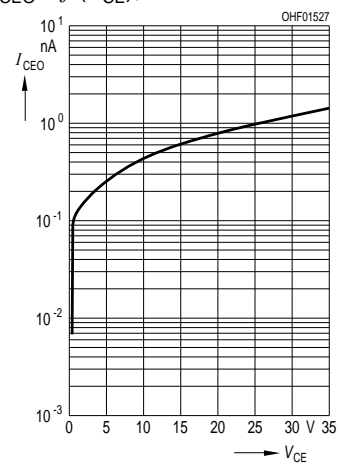
Photocurrent

$I_{PCE} = f(V_{CE}), E_e = \text{Parameter}$



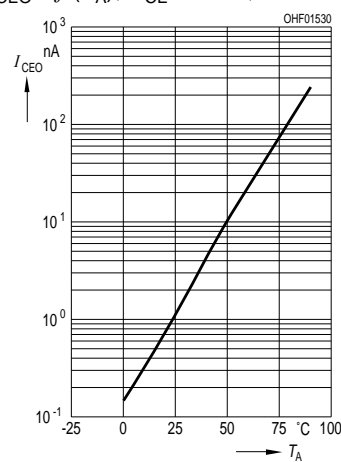
Dark Current

$I_{CEO} = f(V_{CE}), E = 0$



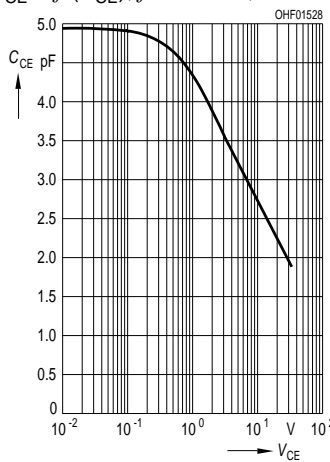
Dark Current

$I_{CEO} = f(T_A), V_{CE} = 25 V, E = 0$



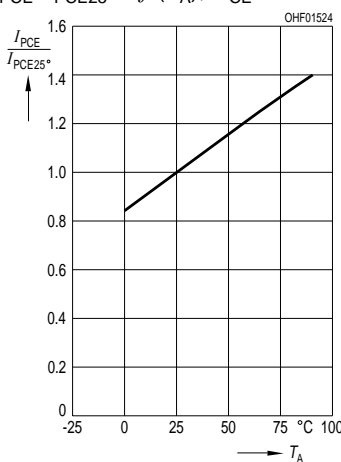
Capacitance

$C_{CE} = f(V_{CE}), f = 1 \text{ MHz}, E = 0$

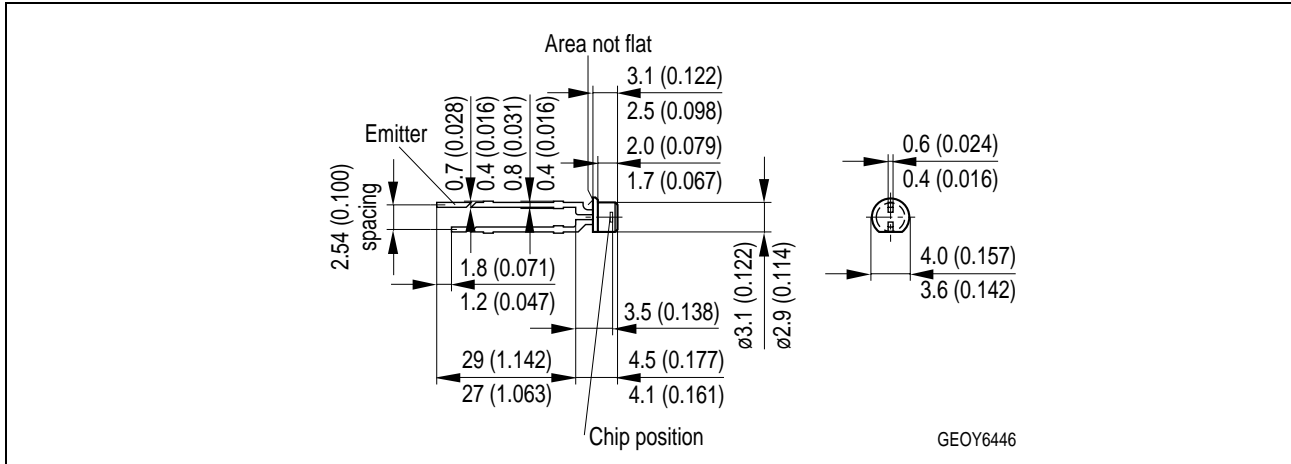


Photocurrent

$I_{PCE} / I_{PCE25^\circ} = f(T_A), V_{CE} = 5 V$



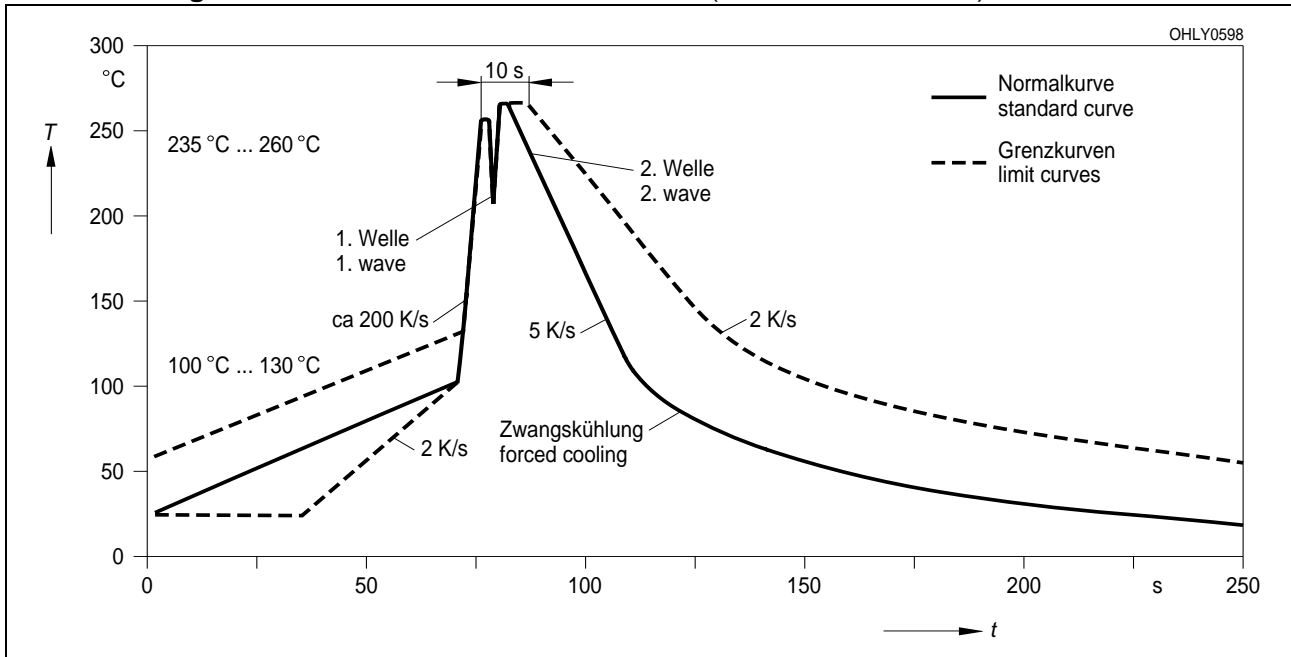
**Maßzeichnung
Package Outlines**



Maße in mm (inch) / Dimensions in mm (inch).

**Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering**

(nach CECC 00802)
(acc. to CECC 00802)



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² Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.

EU RoHS and China RoHS compliant product



此产品符合欧盟 RoHS 指令的要求；

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